Trend Study 11A-4-00

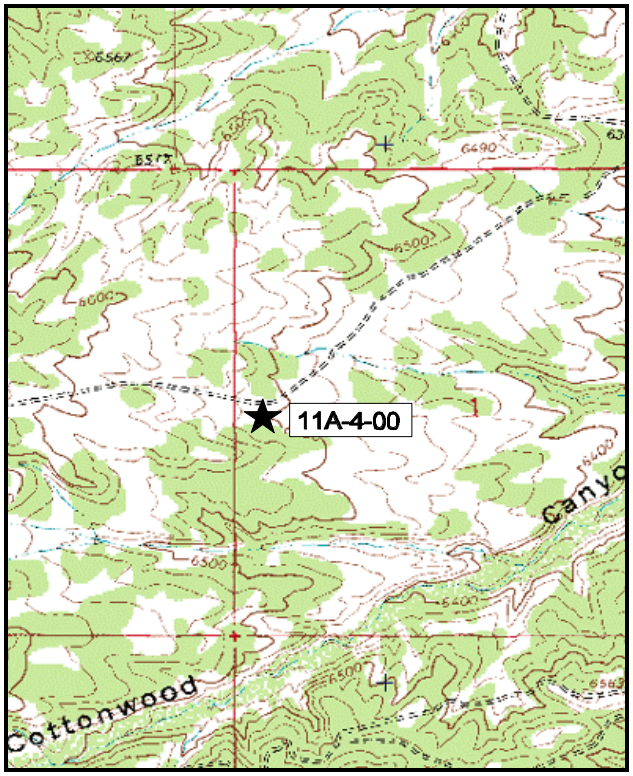
Study site name: Cottonwood Canyon . Range type: Salt Desert Shrub .

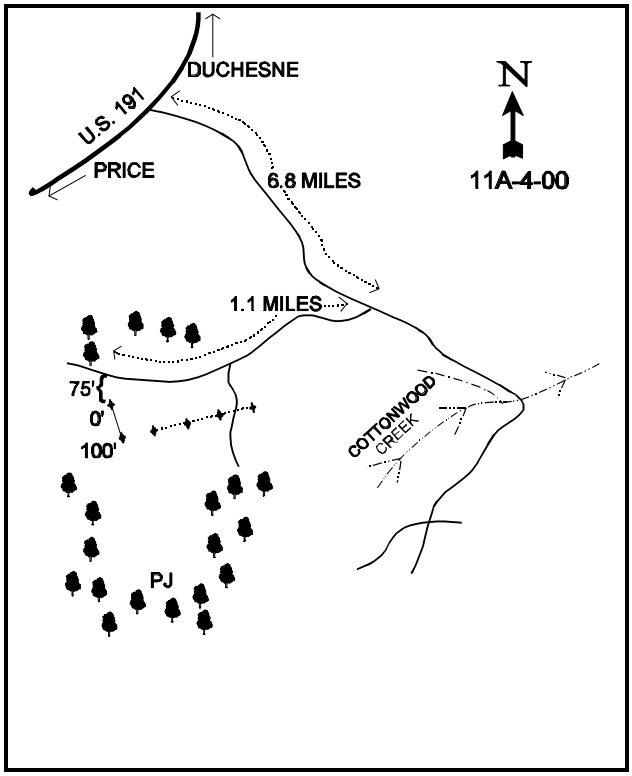
Compass bearing: frequency baseline 151°M .

Footmark (first frame placement) 5 feet, footmarks (frequency belts) line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft). Belt 4 no rebar.

LOCATION DESCRIPTION

From Duchesne, go up Indian Canyon approximately 2.5 miles to the Cottonwood - Sower Canyon Road. Turn left and to the southeast on the main road 6.8 miles to a jeep trail on top of the ridge just before Cottonwood Creek. Turn right on the jeep trail and drive 1 mile west to a fork. Continue approximately 0.1 miles up the right fork to the study site. The 0-foot baseline stake is 15 paces south of the road in the sage/grass type. The study is marked with 12 inch tall fenceposts. The 0-foot baseline stake is marked with browse tag #9037. The baseline is interrupted between the first and second lines.





Map Name: Duchesne SW

Diagrammatic Sketch

Township 5S , Range 5W , Section 1

UTM 4436057 N, 550778.721 E

DISCUSSION

Trend Study No. 11A-4 (15-4)

The Cottonwood Canyon trend study samples winter range on the long slope down from Anthro Mountain and the Badland Cliffs to the Duchesne River. The study is in a mixed shrub/grass community on a 2%, east facing slope surrounded by pinyon-juniper woodland. The site is located on a DWR wildlife management area at an elevation of 6,500 feet. The unit is surrounded by BLM and Ute tribal lands. A pellet group transect read near the baseline in 2000 estimates light use by deer (15 deer days use/acre, 37 ddu/ha) and moderate use by elk (59 elk days use/acre, 146 edu/ha). No cattle pats were sampled in 2000. Antelope also utilize the site but sign was relatively infrequent.

The clay loam soil is moderately deep with an estimated effective rooting depth of over 27 inches. The soil reaction is slightly alkaline (pH of 7.5). A stoniness index estimated from penetrometer readings shows the majority of probes to be 16 inches or deeper in the profile. However, these readings were more a measure of compaction than rock, as very little rock was contacted within the profile. Soil erosion is not a significant problem on the site, although some soil loss is evident in the interspaces resulting in some pedestalling around shrubs. Erosion is more severe in the surrounding pinyon-juniper woodland type. Rock and pavement cover values combined are estimated at nearly 9%. Vegetative cover is estimated at 31% in 1995, decreasing to about 29% in 2000. The main negative factor influencing the soil at this site is the sudden increase of bare ground cover in 2000.

Fringed sagebrush is the most abundant browse species and it accounted for 42% of the browse cover in 2000. Estimated population density of fringed sagebrush is currently 8,680 plants/acre, a decrease of nearly half the estimated number in 1995. Percent decadency also increased to 21%. The dry year in 2000 is most likely the cause of the decrease in density and increase in percent decadency. Plants in poor vigor increased from zero in 1995 to 42% in 2000. Shadscale currently (‘00) provides as much cover as fringed sagebrush and has an estimated density of 1,740 plants/acre. Vigor was mostly good in 1995, but in 2000, 53% of the population displayed poor vigor. Percent decadency was low in 1995 at 10%, this drastically increased to 70% in 2000. Use was moderate to heavy in 2000. Winterfat shows many of the same changes as shadscale in 2000. Percent decadency and poor vigor on winterfat increased from 0% in 1995 to 63% in 2000. Also, 52% of the population were classified as having heavy use in 2000. The level of use may have been overestimated due to the dry conditions yielding very little annual growth. These downward changes in key browse parameters are mostly due to the drought experienced in 2000 and should improve with better precipitation in the future. Both winterfat and shadscale have a higher proportion of decadent, dying plants than young plants. This should be watched in the future for possible population losses. Other browse species that are present, but in low abundance include: bud sage, black sagebrush, basin big sagebrush, Wyoming big sagebrush, fourwing saltbush, rabbitbrush, broom snakeweed and prickly pear.

Grasses provided 62% of the total vegetative cover in 1995, increasing to 84% in 2000. Needle-and-thread, thickspike wheatgrass and blue grama are the dominant species which provide nearly all of the grass cover. Needle-and-thread and thickspike remained at stable frequencies in 2000, while blue grama significantly decreased. Blue grama is a warm season species and this decrease is not surprising with the extremely dry conditions in 2000, especially in the summer. Other grasses include: Indian ricegrass, bottlebrush squirreltail and galleta. Cheatgrass was sampled in one quadrat in 1995, but was not sampled in 2000. Sum of nested frequency of grasses has been stable over all sampling periods and only decreasing slightly in 2000 with the dry conditions. In 1995, forbs were dominated by annual species which included woolly navarretia, Fremont goosefoot, slimleaf goosefoot, annual stickweed and tansy mustard. However, no annual forbs were sampled in 2000 due to drought. Sum of nested frequency of all forbs declined from 430 in 1995 to 22 in 2000. Total cover for forbs has never really exceeded 3% in any year. Perennial forbs have been very scarce in all years.

1988 APPARENT TREND ASSESSMENT

The grasses are quite competitive. Forb density and diversity is predictably low. The grasses provide significant ground cover. Most of the vegetative ground cover is provided by mats of blue grama and numerous western wheatgrass stems which together provide excellent erosion control. There is also a significant amount of pavement cover (25%).

1995 TREND ASSESSMENT

The soil shows little sign of erosion due to the abundance of herbaceous vegetation and litter cover. Soil trend is stable. Fringed sagebrush density is high and the plants have become more robust since 1988. The most preferred forage species are found in moderate densities with mostly moderate hedging and nearly the same height and crown measurements. The exception is winterfat which doubled in size (height and crown). Other invasive species are in low abundance and do not appear to be increasing. The browse trend is stable, although there is a dense population of fringed sagebrush. Sum of nested frequency for perennial grasses has stayed nearly the same with only a single occurrence of cheatgrass. Perennial forb sum of nested frequency has increased, but the forbs are still proportionally dominated by annual species. Grasses contribute the most to the herbaceous understory. This leads to a stable herbaceous understory at this time, although there is poor forb composition.

TREND ASSESSMENT
soil - stable (3)
browse - stable (3)
herbaceous understory - stable (3)

2000 TREND ASSESSMENT

Trend for soil is slightly down with a large increase of bare ground and evident soil loss in the interspaces. The ratio of protective ground cover to bare soil decreased as well. The large increase in bare ground is the result of the drought experienced in 2000. Trend for browse is down as shadscale and winterfat show drastic increases in poor vigor and percent decadency. Estimated use increased on these species in 2000, but this may be overestimated due to these species appearing heavily used because of low annual growth with drought. Although sum of nested frequency of perennial grasses and forbs slightly decreased in 2000, trend is considered stable. Most of the loss in frequency is from perennial forbs which have been in low abundance in all years. Currently, forbs only contribute 0.1% cover. Perennial grasses are the dominant component in the herbaceous understory and remained at nearly the same sum of nested frequency as the previous reading.

TREND ASSESSMENT
soil - slightly down (2)
browse - down (1)
herbaceous understory - stable (3)

HERBACEOUS TRENDS --
Herd unit 11A, Study no: 4

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'88	'95	'00	'88	'95	'00	'95	'00
G	Agropyron dasystachyum	$_{a}$179	$_{b}$255	$_{b}$279	64	80	92	6.46	5.86
G	Agropyron spicatum	-	4	-	-	2	-	.04	-
G	Bouteloua gracilis	$_{c}$298	$_{b}$190	$_{a}$152	89	67	55	4.76	4.83
G	Bromus tectorum (a)	-	1	-	-	1	-	.00	-
G	Hilaria jamesii	-	-	-	-	-	-	.00	-
G	Oryzopsis hymenoides	$_{a}$12	$_{b}$44	$_{ab}$21	6	19	13	1.10	.51
G	Sitanion hystrix	15	15	36	9	8	13	.09	.84
G	Stipa comata	190	167	172	81	63	67	5.62	9.39
Total for Annual Grasses		0	1	0	0	1	0	0.00	0
Total for Perennial Grasses		694	675	660	249	239	240	18.09	21.44
Total for Grasses		694	676	660	249	240	240	18.09	21.44
F	Astragalus purshii	$_{a}$-	$_{b}$6	$_{a}$-	-	3	-	.01	-
F	Chenopodium fremontii (a)	-	$_{b}$77	$_{a}$-	-	37	-	.55	-
F	Chenopodium leptophyllum (a)	-	$_{b}$66	$_{a}$-	-	30	-	.23	-
F	Cryptantha spp.	5	4	-	3	2	-	.01	-
F	Descurainia pinnata (a)	-	$_{b}$38	$_{a}$-	-	17	-	.39	-
F	Lappula occidentalis (a)	-	$_{b}$32	$_{a}$-	-	15	-	.32	-
F	Machaeranthera grindelioides	-	3	-	-	1	-	.00	-
F	Navarretia intertexta (a)	-	$_{b}$135	$_{a}$-	-	65	-	1.06	-
F	Orthocarpus luteus (a)	3	-	-	1	-	-	-	-
F	Phlox austromontana	3	-	5	1	-	2	-	.03
F	Schoencrambe linifolia	$_{a}$1	$_{b}$48	$_{a}$5	1	24	2	.31	.01
F	Sphaeralcea coccinea	9	15	8	7	9	4	.09	.04
F	Taraxacum officinale	-	2	-	-	1	-	.00	-
F	Townsendia incana	-	4	4	-	2	2	.01	.01
F	Tragopogon dubius	2	-	-	1	-	-	-	-
Total for Annual Forbs		3	348	0	1	164	0	2.56	0
Total for Perennial Forbs		20	82	22	13	42	10	0.45	0.10
Total for Forbs		23	430	22	14	206	10	3.02	0.10

Values with different subscript letters are significantly different at % = 0.10

BROWSE TRENDS --
Herd unit 11A, Study no: 4

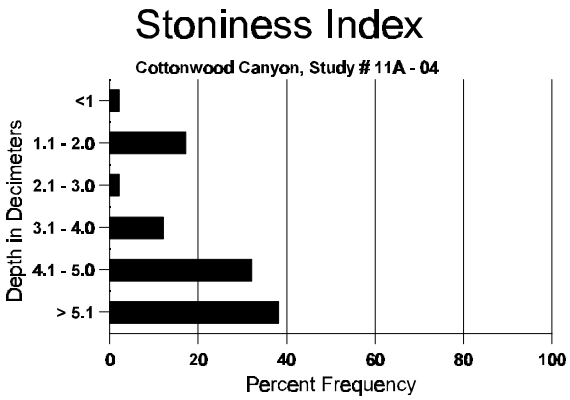
Type	Species	Strip Frequency '95	Strip Frequency '00	Average Cover % '95	Average Cover % '00
B	Artemisia frigida	93	87	1.34	1.63
B	Artemisia nova	5	3	-	.15
B	Artemisia spinescens	15	1	.19	.18
B	Artemisia tridentata wyomingensis	1	1	-	-
B	Atriplex confertifolia	62	49	4.85	1.62
B	Ceratoides lanata	29	27	1.56	.30
B	Chrysothamnus viscidiflorus viscidiflorus	1	2	-	-
B	Gutierrezia sarothrae	4	2	.15	-
B	Opuntia spp.	1	0	-	-
B	Pediocactus simpsonii	2	0	-	-
Total for Browse		213	172	8.10	3.89

BASIC COVER --
Herd unit 11A, Study no: 4

Cover Type	Nested Frequency '95	Nested Frequency '00	Average Cover % '88	Average Cover % '95	Average Cover % '00
Vegetation	344	347	23.50	31.20	28.95
Rock	135	32	0	.91	.08
Pavement	322	325	24.75	7.81	8.63
Litter	394	376	30.50	28.26	29.41
Cryptogams	194	111	.25	4.27	1.81
Bare Ground	343	362	21.00	20.09	39.95

SOIL ANALYSIS DATA --
Herd Unit 11A, Study # 4, Study Name: Cottonwood Canyon

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
27.32	60.0 (18.11)	7.5	36.9	34.8	28.3	1.9	8.7	233.6	0.7



PELLET GROUP FREQUENCY --
Herd unit 11A, Study no: 4

Type	Quadrat Frequency		Pellet Transect	
	'95	'00	Pellet Groups per Acre '00	Days Use per Acre (ha) '00
Rabbit	26	36	731	N/A
Elk	15	28	766	59 (146)
Deer	13	7	200	15 (37)
Cattle	2	-	-	-

BROWSE CHARACTERISTICS --
Herd unit 11A, Study no: 4

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia frigida																		
S	88	4	-	-	-	-	-	3	-	-	7	-	-	-	466			7
	95	146	-	-	-	-	-	-	-	-	146	-	-	-	2920			146
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
Y	88	56	-	-	4	-	-	9	-	-	68	-	1	-	4600			69
	95	485	-	-	-	-	-	-	-	-	485	-	-	-	9700			485
	00	25	48	-	-	-	-	-	-	-	55	1	11	6	1460			73
M	88	76	-	-	15	-	-	4	-	-	89	-	5	1	6333	6	4	95
	95	207	16	-	5	-	-	-	-	-	228	-	-	-	4560	15	9	228
	00	240	28	1	-	-	-	-	-	-	169	2	93	5	5380	2	4	269
D	88	15	-	-	-	-	-	-	-	-	4	-	8	3	1000			15
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	77	14	1	-	-	-	-	-	-	25	-	19	48	1840			92
X	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	200			10

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	10%	+16%
'95	02%	00%	00%	-39%
'00	21%	.46%	42%	

Total Plants/Acre (excluding Dead & Seedlings)				
'88	11933	Dec:		8%
'95	14260			0%
'00	8680			21%

Artemisia nova																		
Y	88	2	-	-	1	-	-	-	-	-	3	-	-	-	200			3
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	3	5	-	-	-	-	-	-	-	8	-	-	-	160	13	18	8
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	6	21	0
D	88	1	-	-	-	-	-	-	-	-	-	-	-	1	66			1
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	2	-	5	-	1	-	-	-	-	-	-	-	8	160			8
X	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	25%	-40%
'95	63%	00%	00%	+ 0%
'00	13%	63%	100%	

Total Plants/Acre (excluding Dead & Seedlings)				
'88	266	Dec:		25%
'95	160			0%
'00	160			100%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia spinescens																		
Y	88	5	-	-	-	-	-	-	-	-	5	-	-	-	333			5
	95	-	-	1	-	-	-	-	-	-	1	-	-	-	20			1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	88	16	-	-	1	-	-	4	-	-	20	-	1	-	1400	5	6	21
	95	-	6	15	-	-	-	-	-	-	21	-	-	-	420	6	12	21
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20	4	13	1
D	88	9	-	-	-	-	-	-	-	-	5	-	1	3	600			9
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	14%	-81%
'95	27%	73%	00%	-95%
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'88	2333	Dec:	26%
	'95	440		0%
	'00	20		0%

Artemisia tridentata wyomingensis																		
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	-	1	-	-	-	-	-	-	-	1	-	-	-	20	17	26	1
	00	-	-	1	-	-	-	-	-	-	-	-	1	-	20	21	40	1
D	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	1	-	-	-	-	-	-	-	-	-	1	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	00%	
'95	100%	00%	00%	+50%
'00	00%	100%	100%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'88	0	Dec:	0%
	'95	20		0%
	'00	40		50%

Atriplex canescens																		
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	18	31	0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	00%	
'95	00%	00%	00%	
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'88	0	Dec:	-
	'95	0		-
	'00	0		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Atriplex confertifolia																		
S	88	5	-	-	-	-	-	-	-	-	5	-	-	-	333			5
	95	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	88	11	-	-	1	-	-	1	-	-	13	-	-	-	866			13
	95	1	1	-	-	-	-	-	-	-	2	-	-	-	40			2
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	88	22	3	-	-	-	-	-	-	-	25	-	-	-	1666	13	18	25
	95	84	7	2	-	-	-	-	-	-	93	-	-	-	1860	13	23	93
	00	4	6	5	1	5	4	1	-	-	25	1	-	-	520	8	17	26
D	88	22	3	-	-	-	-	-	-	-	24	-	-	1	1666			25
	95	8	2	-	-	-	-	-	-	-	5	-	-	5	200			10
	00	2	15	30	-	1	3	10	-	-	15	-	8	38	1220			61
X	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	340			17
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	520			26

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	10%	00%	02%	-50%
'95	10%	02%	05%	-17%
'00	31%	48%	53%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'88	4198	Dec:	40%
	'95	2100		10%
	'00	1740		70%

Ceratoides lanata																		
S	88	1	-	-	-	-	-	1	-	-	2	-	-	-	133			2
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	88	22	2	1	3	-	-	8	-	-	36	-	-	-	2400			36
	95	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
	00	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
M	88	9	6	-	2	-	-	1	-	-	18	-	-	-	1200	6	6	18
	95	39	27	1	1	-	-	-	-	-	68	-	-	-	1360	12	11	68
	00	6	-	6	-	-	6	-	-	-	13	-	5	-	360	3	5	18
D	88	9	-	1	-	-	-	-	-	-	7	-	1	2	666			10
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	2	10	16	-	6	-	-	-	-	5	-	11	18	680			34
X	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	140			7

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	13%	03%	05%	-67%
'95	38%	01%	00%	-24%
'00	30%	52%	63%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'88	4266	Dec:	16%
	'95	1420		0%
	'00	1080		63%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Chrysothamnus viscidiflorus viscidiflorus																		
Y	88	20	-	-	-	-	-	1	-	-	21	-	-	-	1400			21
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	88	9	-	-	-	-	-	-	-	-	9	-	-	-	600	7	4	9
	95	-	-	-	1	-	-	-	-	-	1	-	-	-	20	10	12	1
	00	2	-	-	-	-	-	-	-	-	2	-	-	-	40	2	4	2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	00%	-99%
'95	00%	00%	00%	+50%
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'88	2000	Dec:	-
	'95	20		-
	'00	40		-

Gutierrezia sarothrae																		
S	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	88	-	-	-	-	-	-	1	-	-	1	-	-	-	66			1
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	6	-	-	-	-	-	-	-	-	6	-	-	-	120	10	12	6
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20	4	6	1
D	88	2	-	-	-	-	-	1	-	-	2	-	-	1	200			3
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	25%	-55%
'95	00%	00%	00%	-50%
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'88	266	Dec:	75%
	'95	120		0%
	'00	60		67%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Opuntia spp.																		
M	88	1	-	-	-	-	-	-	-	-	1	-	-	-	66	4	12	1
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	6	14	0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	3	10	0
D	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	1	-	-	-	-	-	-	-	-	-	-	-	1	20			1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	00%	-70%
'95	00%	00%	100%	
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'88	66	Dec:	0%
	'95	20		100%
	'00	0		0%

Pediocactus simpsonii																		
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	3	-	-	-	-	-	-	-	-	3	-	-	-	60	1	2	3
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'88	00%	00%	00%	
'95	00%	00%	00%	
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'88	0	Dec:	-
	'95	60		-
	'00	0		-